

# *Spalangia leiopleura* Gibson, 2009 (Hymenoptera: Pteromalidae): first record from Brazil

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## Abstract

*Spalangia leiopleura* Gibson, 2009 (Hymenoptera: Pteromalidae) is reported for the first time from Brazil. One female was collected using a Mörice trap at the Reserva Biológica do Jaíba, municipality of Matias Cardoso, state of Minas Gerais, Brazil, on 19–22 May 2015. This species was previously known only from North America, between about 40° N in USA to Tamaulipas state in northern Mexico. Thus, our new record extends the known distribution of *S. leiopleura* southward about 7,300 km, and represents a new national record for Brazil and a new record for South America and the Neotropical Region.

## Key words

Biodiversity; Chalcidoidea; Spalangiinae.

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## Introduction

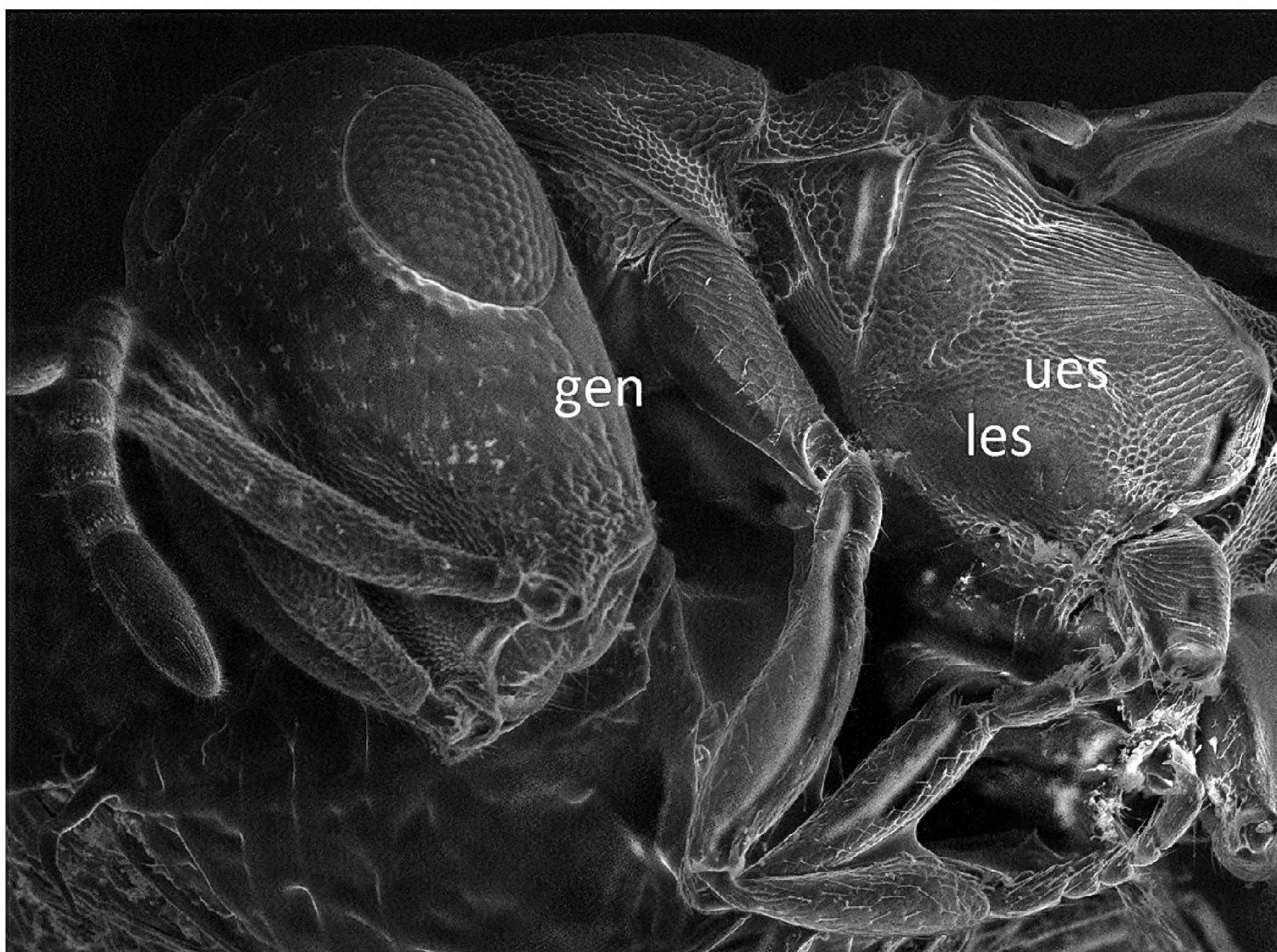
*Spalangia* Latreille, 1805 (Hymenoptera, Pteromalidae, Spalangiinae) is a genus of solitary idiobiont ectoparasitoids of synanthropic and other flies, mainly of Muscidae, Sarcophagidae and Calliphoridae (Diptera) (Ashmead 1904, Bouček 1963, Hanson and Heydon 2006). Twelve *Spalangia* species are reported in Brazil (Bouček 1963, Bouček 1965, Madeira 1985, Berti Filho et al. 1989, De Santis 1989, Silveira et al. 1989, De Santis and Fidalgo 1994, Marchiori et al. 2002, Costa et al. 2004, Gibson 2009, Gibson and Reigada 2009).

*Spalangia leiopleura* Gibson, 2009 was first found in North America and was known to occur from about 40° N in USA into northern Mexico (Gibson 2009). This species is a parasitoid of *Haematobia irritans* (L., 1758)

(Diptera: Muscidae) (Gibson 2009), but is also associated with Sarcophagidae. According to Gibson (2009), Figg et al. (1983) reared *S. leiopleura* (as *Spalangia drosophilae* Ashmead, 1887) from *Adia cinerella* (Fallén, 1825) (Diptera: Anthomyiidae) and from a sample of Sarcophagidae (Diptera) puparia composed of 3 mixed and indistinguishable species based on the puparia: *Oxysarcodexia ventricosa* (Wulp, 1895), *Ravinia derelicta* (Walker, 1853) and *R. latisetosa* Parker, 1914.

## Methods

The specimen (Fig. 1) was collected on 19–22 May 2015 in the municipality of Matias Cardoso, state of Minas Gerais, Brazil, at Reserva Biológica do Jaíba [15°04'04" S, 043°45'36" W] (Fig. 2), in a Mörice trap.



**Figure 1.** Specimen (gaster missing) of *Spalangia leiopleura* used in this study, lateral view; gen, gena; les, lower mesepisternum; ues, upper mesepisternum. Photo by L.B.R. Fernandes.

It was collected under a permanent license to collect zoological material, number 342115, granted to Angélica Maria Penteado Martins Dias by the Ministério do Meio Ambiente (MMA), Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA), Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio), and Sistema de Autorização e Informação em Biodiversidade (SISBIO), and is deposited in the “Cole-

ção de Insetos Entomófagos Oscar Monte” (IB-CBE), of Instituto Biológico, Campinas, São Paulo state, Brazil (V.A. Costa, curator), number IB-CBE-002128.

The specimen (gaster missing) was examined and photographed through a Leica M165C stereomicroscope equipped with a Leica DFC 420 digital camera; photographs were combined with Leica Application Suite v3.8 to result in final extended focusing images. SEM-micrographs were taken of the uncoated specimen in low vacuum, with a Quanta 250 scanning electron microscope (FEI Company, Hillsboro, USA) at the Universidade Federal de São Carlos in São Carlos, state of São Paulo, Brazil.

The distribution data of *S. leiopleura* were gathered from Gibson (2009: fig. 252) and combined with the coordinates of the collection site of the present study to illustrate known distribution.

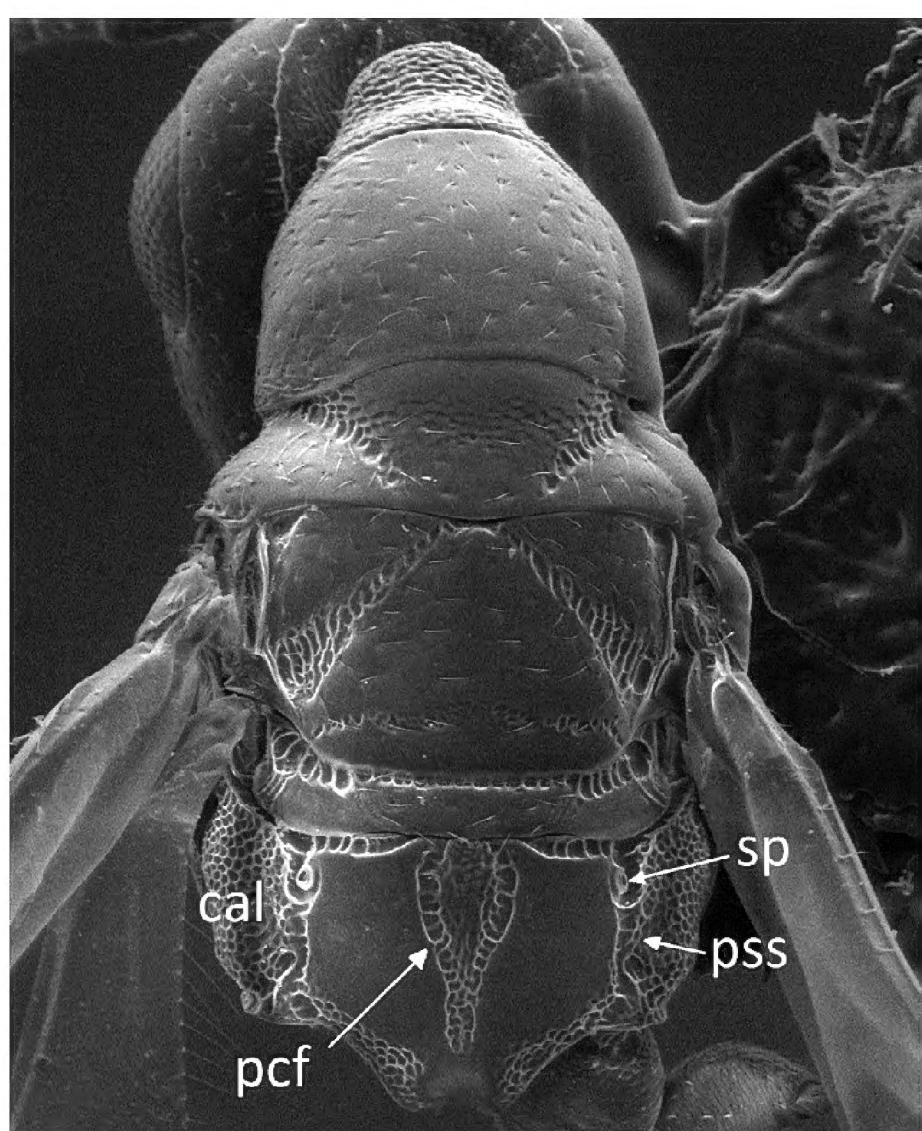
## Results

The initial identification was made using the key to species by Gibson (2009); also, SEM images were sent to Dr Gary A.P. Gibson (Honorary Research Associate at Canada National Collection of Insects, Ottawa, Ontario, Canada), who kindly confirmed the species determination.

*Spalangia leiopleura* belongs to the *drosophilae* species group, which is characterized by the propodeum having Y- to broadly V-shaped paramedian crenulate furrows (Fig. 3) that are variably wide and obvious but between them delineating a posteriorly tapered, lanceolate to somewhat heart-shaped median band that usually is smooth and shiny. Females are most similar to those of



**Figure 2.** Distribution of *Spalangia leiopleura*. Red squares: previously known collecting sites; green square: collecting site of new record. Map by R.I.R. Lara and N.W. Perioto.



**Figure 3.** Specimen (gaster missing) of *Spalangia leiopleura* used in this study, dorsal view; cal, callus; pcf, paramedian crenulate furrows; pss, postspiracular sulcus; sp, spiracle. Photo by L.B.R. Fernandes.

*S. drosophilae*. Gibson (2009) used the following combination of key features to distinguish the 2 from the other 4 species assigned to the *drosophilae* group: propodeum with a crenulate postspiracular sulcus in combination with the callus usually punctate-reticulate to rugulose (Fig. 3); gena smooth with setae originating from pin-prick-like punctures except near oral margin where it is rugulose-roughened; mesopleuron with pectal region bare except for 1 posteroventral seta; upper mesepisternum coriaceous-granular, smoothly merged with lower mesepisternum without transepisternal line; and fore wing bare behind submarginal vein, except for at most

1–3 setae on basal fold near parastigma. The female we identify as *S. leiopleura* possesses these features except the pectal region has 4 setae (Fig. 4). We interpret this difference as intraspecific variation. Only comparatively subtle differences differentiate *S. leiopleura* females from those of *S. drosophilae*. Key features used by Gibson (2009) for *S. leiopleura* versus *S. drosophilae* are as follows: clava slender, at least 3× as long as wide (vs at most 2.7× as long as wide), scrobal depression with smooth, setose, inclined surface lateral to elongate-slender coriaceous scrobes (vs scrobal depression more broadly coriaceous, the sculpture more or less obviously extending over inclined lateral surface onto inner half of parascrobal region above torulus, acropleuron very finely striate, the longitudinal sculpture ventrally merging with smoother, though often finely coriaceous pectal region (Figs 1, 4) (vs acropleuron usually more distinctly longitudinally striate-carinate, but at least with ventral, usually curved stria/carina obliquely angled toward base of tegula abruptly differentiating acropleuron from smooth and shiny pectal region, mesoscutal median lobe with transverse region of coriaceous-alutaceous sculpture near middle (vs mesoscutal median lobe usually with puncture or small region of punctures posterior to transverse coriaceous-alutaceous region), flagellum with second funicular segment at most slightly transverse and subsequent funicular segments subquadrate to slightly longer than wide (vs flagellum often with second funicular segment and sometimes subsequent funicular segments conspicuously transverse).

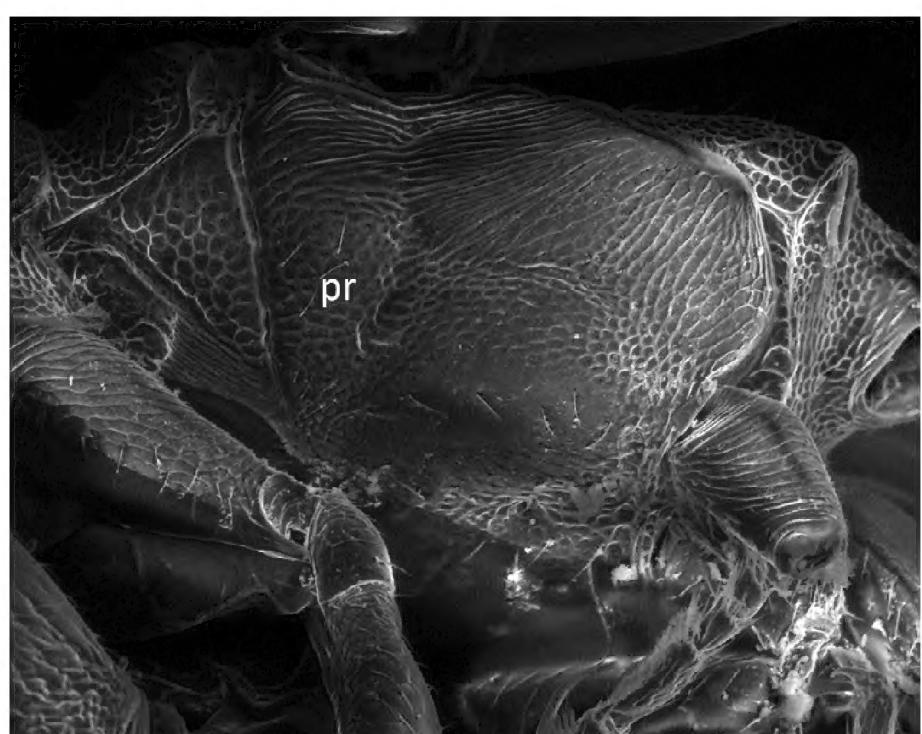
## Discussion

The collecting site of *S. leiopleura* in Brazil, Reserva Biológica do Jaíba, located at Minas Gerais state, is about 7,300 km from the southernmost site (Tamaulipas state, Mexico) previously recorded for the species (Gibson 2009) (Fig. 2). Thus, this is a new national record for Brazil, a new record for South America, and a substantial southern range extension for the species.

*Spalangia leiopleura* is a parasitoid of the horn fly, *H. irritans*, among other dipteran species (Gibson 2009). Few hymenopteran species are known to parasitize *H. irritans* in Brazil (Mendes and Linhares 1999, Marchiori 2014), although the horn fly has been present in the country since 1977 (Valério and Guimarães 1983). *Spalangia leiopleura* could aid in the biological control of this pest; however, nothing is known yet about the potential of *S. leiopleura* to control the population of its hosts.

## Acknowledgements

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**Figure 4.** Mesopleura of *Spalangia leiopleura* used in this study, lateral view; pr, pectal region with the 4 setae. Photo by L.B.R. Fernandes.

Luciana Fernandes for the help with the SEM images, to Dr Rogéria I. R. Lara and Dr Nelson W. Perioto (Agência Paulista de Tecnologia dos Agronegócios, Polo Regional Centro-Leste) for the help with the distribution map, and to Dr Gary A. P. Gibson (Honorary Research Associate at Canada National Collection of Insects, Ottawa, Ontario, Canada), for the confirmation on the species determination. Finally, thanks to the anonymous reviewers, who have improved considerably the manuscript.

## Authors' Contributions

BSJ and MAS made the separation into families of specimens collected by the traps, VAC made the species determination, BSJ and VAC wrote the text.

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